REMARKS

This Application has been carefully reviewed in light of the Office Action mailed June 6, 2006 ("Office Action"). At the time of the Office Action, Claims 1-36 were pending and rejected. As described below, Applicant believes all claims to be allowable over the cited references. Therefore, Applicants respectfully request reconsideration and full allowance of all pending claims.

Specification Objections

The Examiner objects to the disclosure because of the following informalities:

> The background of the instant application is not in accordance with the requirements. The content of background of the invention should contain information regarding the field of invention and the description of related art see MPEP 601 (R 3) Guidelines for Drafting a Non-provisional Patent Application under 35 U.S.C. 111(a).

(Office Action, page 2). Applicant has amended the Specification beginning on Page 2, line 3 to include a section entitled "Technical Field of the Invention." Accordingly, Applicant submits that the Specification is in accordance with the requirements of M.P.E.P. § 601. Applicant respectfully requests that the objection now be withdrawn.

Section 102 Rejections

The Examiner rejects Claims 1-36 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,134,546 issued to Bestgen et al. ("*Bestgen*"). For the reasons discussed below, Applicants respectfully request reconsideration and allowance of Claims 1-36.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987); MPEP § 2131. In addition, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claims" and "[t]he elements must be arranged as required by the claim." *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989); *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990); MPEP § 2131 (*emphasis added*). Whether considered alone or in combination with any other cited references, *Bestgen* does not disclose, either expressly or inherently, each and every element of the claims.

Claims 1-6, 13-18 and 25-30

Independent Claim 1 of the present Application recites:

> A method of optimized costing, the method comprising:
> identifying a join that identifies a first table and a second table, the first table comprising one or more unique first table values, the second table comprising one or more unique second table values;
> determining an optimized cost of reading the first table, the optimized cost of reading the first table comprising:
> if the number of unique first table values is greater than the number of unique second table values,
> returning the number of instances where a unique first table value matches a unique second table value;
> otherwise,
> returning the number of unique first table values;
> determining an optimized cost of reading the second table, the optimized cost of reading the second table comprising the number of unique second table values; and
> summing the optimized cost of reading the first table and the optimized cost of reading the second table.

Thus, as recited in Claim 1, the optimized cost of reading the first table is calculated two different ways depending on whether "the number of unique first table values is greater than the number of unique second table values." Specifically, "if the number of unique first table values is greater than the number of unique second table values," the optimized cost of reading the first table comprises "returning the number of instances where a unique first table value matches a unique second table value." Otherwise (i.e., where the number of unique first table values is not greater than the number of unique second table values), the optimized cost of reading the first table comprises "returning the number of unique first table values." Applicant respectfully submits that this combination of features and operations is not present in the system disclosed in *Bestgen.*

In the Office Action, the Examiner identifies Column 3, lines 34-48 of *Bestgen* as disclosing Applicant's above-recited features. However, the cited portion merely states:

> The DB2/400 query optimizer 208 is a cost-based optimizer. In its costing phase to determine the optimal query implementation, query optimizer 208 takes into account many factors including the table sizes, available indexes, expected result set size, machine speed, number of processors 102, and main memory 104 available . . . After the query optimizer 208 has determined how the query will be implemented, a cursor template is generated. The cursor contains the low-level implementation plan for the query; the join order, the indexes to be used in implementing the query, the grouping method to be used (hash or index).

(Column 3, lines 34-39). Thus, the query optimizer of *Bestgen* takes into account the listed factors to determine an optimal query implementation for the generation of a cursor template. There is certainly no disclosure, suggestion, or teaching in *Bestgen*, however, of "if, the number of unique first table values is greater than the number of unique second table values, returning the number of instances where a unique first table value matches a unique second table value," as recited in Applicant's Claim 1. Additionally, there is no disclosure of "returning the number of unique first table values" when the number of unique first table values is not greater than the number of unique second table values, as recited in Claim 1. The recited operations are absent from *Bestgen.*

As another example of the deficiencies of *Bestgen,* Applicant respectfully submits that *Bestgen* does not disclose, teach, or suggest "determining an optimized cost of reading the second table, the optimized cost of reading the second table comprising the number of unique second table values," as recited in Applicant's Claim 1. In the Office Action, the Examiner identifies Column 3, lines 58-67 of *Bestgen* as disclosing Applicant's recited features. However, the cited portion merely states:

> The query optimizer 208 receives a join and based on the costing algorithm determines whether hash join will perform better than a nested loop join implementation. The query optimizer 208 chooses the join order and if post-join processing will be needed. Post-join processing is needed fro grouping, ordering, any non-equal selection that contains columns from more than one table, or resolution of expressions that contain columns from more than one table. The cost of post-join processing is included in the costing of the hash join algorithm.

(Column 3, lines 58-67). Thus, the cited portion merely discloses that the query optimizer selects whether to use a hash join or a nested loop join implementation based on the costing algorithm performed by the query optimizer. As discussed above, however, the costing algorithm merely "takes into account many factors including the table sizes, available indexes, expected result set size, machine speed, number of processors 102, and main memory 104 available" to determine "the optimal query implementation." (Column 3, lines 34-39). Accordingly, the cited portions of *Bestgen* do not disclose, teach, or suggest "determining an optimized cost of reading the second table, the optimized cost of reading the second table comprising the number of unique second table values," as recited in Applicant's Claim 1.

As still another example of the deficiencies of *Bestgen*, Applicant respectfully submits that *Bestgen* does not disclose, teach, or suggest "summing the optimized cost of reading the first table and the optimized cost of reading the second table," as recited in Applicant's Claim 1. In the Office Action, the Examiner identifies Column 4, lines 29-37 of *Bestgen* as disclosing Applicant's recited features. The cited portion (together with the relevant disclosure before the portion specifically cited by the Examiner) states:

> After the query optimizer 208 has determined to use hash join, the original user query is decomposed into a set of smaller queries, one for each table referenced in the original query . . . The query is rewritten into the QDT format. The query optimizer 208 is then recursively called in order to optimize each new query individually. This frees the query optimizer 208 from restrictions imposed on join queries and allows for better optimization of each single-file query. The cursors are created for each query. For the primary table, the result rows can be read from the cursor. For the secondary table, a hash table is built and returned when a read is done from its cursor."

(Column 4, lines 3-6 and 29-37). Thus, the cited portion of *Bestgen* merely discloses the rewriting of the original query by decomposing the original query into a set of smaller queries for each table. The cited portion does not relate at all to "summing the optimized cost of reading the first table and the optimized cost of reading the second table," as recited in Applicant's Claim 1. The recited operation is completely absent from the disclosure of *Bestgen*.

For at least these reasons, Applicant respectfully requests reconsideration and allowance of Claim 1, together with Claims 2-6 that depend on Claim 1.

The Examiner also relies on *Bestgen* for disclosure of Claims 13 and 25, which recite certain features and operations that are analogous to those discussed above with regard to Claim 1. For example, Claim 13 recites "an optimizer for optimizing costing . . . including . . . a process for determining an optimized cost of reading the first table." Specifically, the cost of reading the first table comprises "if the number of unique first table values is greater than the number of unique second table values, a process for returning the number of instances where a unique first table value matches a unique second table value." Otherwise (i.e., the number of unique first table values is not greater than the number of unique second table values), the optimized cost comprises "a process for returning the number of unique first table values." Claim 13 also recites processes for "determining an optimized cost of reading the second table . . . comprising the number of unique second table values" and "summing the optimized cost of reading the first table and the optimized cost of reading the second table." Accordingly, for reasons analogous to those discussed above with regard to Claim 1, Applicant respectfully submits that *Bestgen* does not disclose, teach, or suggest the features recited in Applicant's Claims 13 and 25.

For at least these reasons, Applicant respectfully requests reconsideration and allowance of Claims 13 and 25, together with Claims 14-18 and 26-30 that depend on Claims 13 and 25, respectively.

Claims 7-12, 19-24, and 31-36

Independent Claim 7 of the present Application recites, *inter alia*:

> 1) removing one or more duplicate instances of each of the one or more unique second table values to determine an optimized cost of reading the second table;
> 2) exiting the join after each of the first unique table values is matched to a second unique table value to determine an optimized cost of reading the first table; and

3) summing the optimized cost of reading the first table and the optimized cost of reading the second table.

Applicant respectfully submits that the recited combination of features and operations is not present in the system disclosed in *Bestgen.*

In the Office Action, the Examiner identifies Column 3, lines 34-48, Column 3 lines 58-67, and Column 4, lines 29-37 of *Bestgen* for disclosure of Applicant's above-enumerated features, respectively. As discussed above with regard to Claim 1, however, the cited portions merely disclose that the cost-based optimizer "takes into account many factors including the table sizes, available indexes, expected result set size, machine speed, number of processors 102, and main memory 104 available" when determining optimal query implementation for the generation of a cursor template. (Column 3, lines 34-48). Specifically, the cost-based optimizer "determines whether hash join will perform better than a nested loop join implementation." (Column 3 lines 58-67). Finally, "[a]fter the query optimizer 208 has determined to use hash join, the original user query is decomposed into a set of smaller queries, one for each table referenced in the original query," and "[t]he query is rewritten into the QDT format." (Column 4, lines 3-6 and 29-37). Accordingly, Applicant respectfully submits that there is no disclosure in *Bestgen* of "removing one or more duplicate instances of each of the one or more unique second table values to determine an optimized cost of reading the second table;" "exiting the join after each of the first unique table values is matched to a second unique table value to determine an optimized cost of reading the first table;" and "summing the optimized cost of reading the first table and the optimized cost of reading the second table," as recited in Claim 7.

For at least these reasons, Applicant respectfully requests reconsideration and allowance of Claim 7, together with Claims 8-12 that depend on Claim 7.

The Examiner also relies on *Bestgen* for disclosure of Claims 19 and 31, which recite certain features and operations that are analogous to those discussed above with regard to Claim 7. For example, Claim 19 recites "an optimizer for optimizing costing" including processes for "removing one or more duplicate instances of each of the one or more unique second table values to determine an optimized cost of reading the second table," "exiting the join after each of the first unique table values is matched to a second unique table value to determine an optimized cost of reading the first table," and "summing the optimized cost of reading the first table and the optimized cost of reading the second table." As another example, Claim 31 recites a computer program for optimizing costing that includes "executable instructions that cause a computer to . . . "remove one or more duplicate instances of each of the one or more unique second table values to determine an optimized cost of reading the second table;" "exit the join after each of the first unique table values is matched to a second unique table value to determine an optimized cost of reading the first table;" and "sum the optimized cost of reading the first table and the optimized cost of reading the second table." Accordingly, for reasons analogous to those discussed above with regard to Claim 7, Applicant respectfully submits that *Bestgen* does not disclose, teach, or suggest the features recited in Applicant's Claims 19 and 31.

For at least these reasons, Applicant respectfully requests reconsideration and allowance of Claims 19 and 31, together with Claims 20-24 and 32-36 that depend on Claims 19 and 31, respectively.

CONCLUSION

Applicants contend that the claims are in condition for allowance, which action is requested. Applicants do not believe any fees are necessary with the submitting of this response. Should any fees be required, Applicants request that the fees be debited from deposit account number 14-0225, Order Number 069092.0182.

Respectfully submitted,

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Date: September 19, 2006

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